

REMARKS

Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-25 are currently being prosecuted. The Examiner is respectfully requested to reconsider his rejections in view of the amendments and remarks as set forth below.

REJECTION UNDER 35 U.S.C. § 112

Claims 3, 4, 16 and 17 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner points out that one phrase in each of these claims is unclear. By way of the present Amendment, Applicants have reworded these phrase to make them clear. Accordingly, this rejection is believed to be overcome.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-5, 7-18 and 20-25 stand rejected under 35 U.S.C. § 103 as being obvious over Berger et al. (U.S. Patent 6,528,145) in view of Nishide et al. (U.S. Patent 5,827,605) and Zak (U.S. Patent 6,006,427). This rejection is respectfully traversed.

The Examiner relies on Berger et al. to show a composite laminate substrate having an inorganic substrate (20) with wiring formed thereon and two substrates comprising printed circuit boards located on two sides of the inorganic substrate with circuits for electrical connections. The Examiner admits that Berger et al. does not teach printed circuit boards being organic and does not teach a passive component formed on the inorganic substrate.

The Examiner relies on Nishide et al. to show an inorganic substrate having a passive component. The Examiner relies on Zak to show organic printed circuit boards.

Applicants submit that claim 1 is not obvious over this three-way combination of references. In Berger et al., the substrates are inorganic. This reference does not disclose organic substrates located on both sides of the inorganic substrate. It also does not show a passive component formed on the inorganic substrate or an electrical connection through organic substrates. Also, Berger et al. uses conventional area array interconnections for semiconductor devices being joined and connected to the printed circuit board. The connections use conventional surface mount technology such as ball grid arrays, land grid arrays or pluggable interconnections (column 10, lines 32-45). This differs from the present invention where the inorganic substrate is embedded with resistors, capacitors and inductors. The present invention does not need any soldering or underfill.

Nishide et al. shows a multi-layer ceramic substrate. It does not show organic substrates located on opposite sides of an inorganic substrate or an electrical connection through the organic substrate.

Zak teaches that substrates can be either inorganic or organic. However, Zak does not disclose two organic substrates located on opposite sides of an inorganic substrate. It also does not disclose an inorganic substrate having a passive component formed thereon.

Applicants submit that none of these three references teach the concept of an inorganic substrate with two organic substrates located on opposite sides. The mere fact that one reference shows organic substrates and another shows inorganic substrate and a third that substrates can be either organic or inorganic does not in any manner suggest the specific arrangement of one inorganic substrate with two organic substrates on either side. Accordingly, Applicants submit that claim 1 is not obvious over this three-way combination of references.

Furthermore, Applicants submit that there is no motivation for combining these three references. The Examiner's suggestion that one skilled in the art would know to do this in order to reduce the cost of making the device in order to reduce the size of the device assumes the inventor's realization that these end results would be obvious without stating any reason as to why it would be. The references do not suggest that this end result will occur, and the Examiner only assumes it based on the present application. Accordingly, Applicants submit there is no motivation for this combination. In view of this, Applicants submit that claim 1 is allowable.

Claim 14 is an independent claim which is similar to claim 1 but only describes one inorganic substrate and one organic substrate. Applicants submit that this claim is also allowable for the same reasons recited above in regard to claim 1; that is, none of the references teach the combination of an inorganic and organic substrate together with the passive component formed

on the inorganic substrate and the connections in the organic substrate.

Accordingly, this claim is likewise allowable.

Claims 2-3 and 15-25 depend from these allowable claims and as such are also considered to be allowable. In addition, each of these claims recite other features of the invention such as the types of components and various process steps. Accordingly, these claims are additionally allowable.

Claims 6 and 19 stand rejected under 35 U.S.C. § 103 as being obvious over Berger et al., Nishide et al. and Zak as applied above and further in view of Czjakowski et al. (U.S. Patent 6,613,978). This rejection is respectfully traversed.

The Examiner states that Czjakowski et al. teach a plurality of print circuit boards formed on a ceramic substrate. However, Applicants submit that even if this reference does teach the plurality of boards, it still does not aid the other three references in overcoming the deficiencies noted above. Furthermore, Applicants submit that this four-way combination is even less obvious than the three-way combination described above; that is, there is no motivation for adding this additional teaching to the other three references.

CONCLUSION

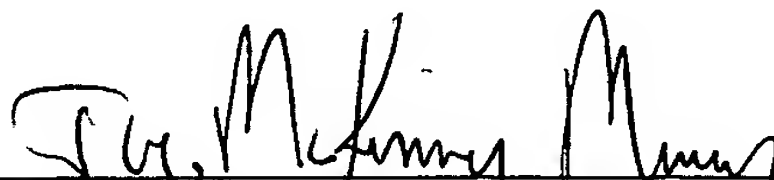
Due to the above remarks, it is believed that the claims clearly distinguish over the patents relied on by the Examiner, either alone or in combination. In view of this, reconsideration of the rejections and allowance of all the claims are respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert F. Gnuse (Reg. No. 27,295) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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